MONITOR AWS

SUTRON

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MONITOR-1

EASY-TO-USE, AFFORDABLE DATALOGGER

- Weather Station Applications
- SDI-12, Analog, Digital Inputs
- SD Card for Set Up & Download
- Full Access Through Front Panel
- Command Line Interface & MODBUS
- Modem/Radio Ready for Full Remote Access

DESCRIPTION

The Monitor, Sutron's easy-to-use and affordable datalogger, is designed to measure common hydrologic and meteorological sensors and log the data in its flash memory. The general purpose Monitor supports up to 16 measurements with its analog, digital, and SDI-12 sensor interfaces. The built-in display/keypad makes it simple to set the station up and perform routine maintenance. Monitor includes an SD memory slot for downloading data or setups. Monitors can be used stand-alone or can be connected to wireless modems for integration into an automatic data collection system.

SPECIAL FEATURES

- Set up 16 independent measurements
- EQUATION PROCESSING!
- Full featured command line interface (RS-232)
- SD Card can download data & read/write set-ups.
- View data & set-up entirely from front panel
- Advanced Averaging
- Operates standalone or connected to wireless modem

INPUTS

Supports the following input types:

- Two 0-5 V Analog Inputs
- Three 0 to (+/-)39 mV Differential Analog Input (for bridge-type pressure sensors)
- One 4-20 mA input
- One digital input for tipping bucket
- A 2nd digital input for frequency counter
- One SDI-12 port (supports up to 16 SDI-12 sensors)

SENSOR COMPATIBILITY EXAMPLES

AIR TEMPERATURE/ RELATIVE HUMIDITY	Including non-linear analog sensors that require equation processing
PRECIPITATION	Using tipping bucket
ANEMOMETER	RM Young or Gill Ultrasonic via analog, frequency, or SDI-12
STAGE	Via Sutron SDI-12 Shaft Encoder or Bubbler
OTHER SENSORS	Barometric Pressure, Solar Radiation, etc. Accepts majority of hydro-met sensors (up to 16 measurements) irrespective of manufacturer

SPECIFICATIONS

CLOCK	Internal real-time clock w/battery backup (5-year coin cell) ±2 minutes a month (0 to +50C).
LOG CAPACITY	>250,000 Readings Flash Memory
TEMPERATURE	-40 to +60 °C (LCD operates -10° C)
DATA CONNECTION	RS232 DB9 (female) connect PC/PDA/modem/ radio +5V or +12V on pin 9 (71 mA at +5V)
POWER CONSUMPTION	<1.0 mA @ 12 VDC standby <20 mA @ 12 VDC active

ANALOG INPUT SPECIFICATIONS

NUMBER OF BITS - 24		
	SINGLE ENDED	DIFFERENTIAL
Full Scale	0 to 5 Volts	+/- 0.0390625 V
Resolution	0.298 uV	4.657 nV
Noise (p/p) @25C	6.5 uV (p/p)	1.6 uV (p/p)
Noise (rms) @25 C	3.4 uV RMS	0.38 uV
Accuracy @25C	0.02%	<.01%
Input Impedance	>2M Ohm	>3M Ohm
	4-20mA INPUT	
Full Scale	20ma	
Resolution	<1nA	
Accuracy @25C	.02%	
24 Volt Current Loop Pwr	24 Volt +/- 5%	
24 Volt	Short Protected	
Resistor	100 Ohm built-in	

Specifications subject to change without notice

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MONITOR-4

EASY-TO-USE, AFFORDABLE DATALOGGER

SUTRON

MONITOR-4

All the features of Monitor-1 Datalogger including SDI-12, Analog, Digital, MODBUS, mounting for radio/modem, SD Card Slot ready to deploy plus it's HOUSED IN FIBERGLASS ENCLOSURE WITH 7 AH BATTERY & SOLAR REGULATOR INCLUDED.

NEMA-4X FIBERGLASS ENCLOSURE with raised twist latch & stress relieving glands

Height (In.): 14.0

Width (In.): 12.0

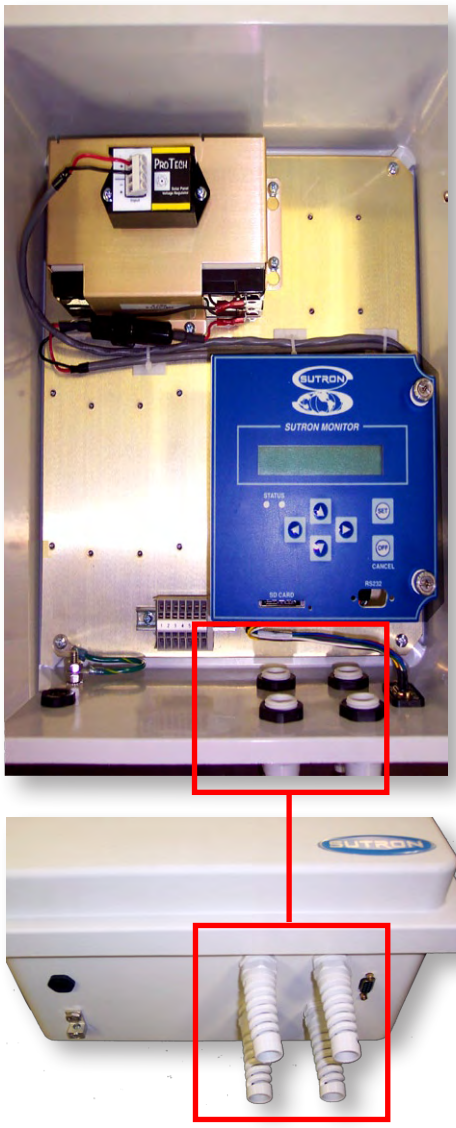
Depth (In.): 6.0

Standard Weight (Lbs.): 12.0

- Material: Cover/Base - Ultraguard® Fiberglass reinforced polyester (Color RAL 7035). Construction meets NEMA/EEMAC Type 1, 2, 3, 4, 4X, 12 and 13. UPC: 085339914518
- UL® 508 listed; Type 1, 2, 3, 3R, 4, 4X, 12, and 13
- CSA-C22 No. 14; Type 1, 2, 3, 3R, 4, 4X, 12, and 13
- IEC60529 Type IP66
- Compliant with RoHS (Restriction of Hazardous Substances)

SOLAR REGULATOR

Input Voltage	12 to 20 VDC
Output Voltage	13.7 VDC
Output Current Limit	3 Amps
Operating Temp Range	-40 F to 140 F (-40 C - 60 C)
Max/Min Wire Size	12AWG / 24 AWG
Size	1.5" x 1.5" x 3"



7 AH BATTERY

- Rechargeable sealed lead-acid batteries
- Maintenance-free
- Overcharge protection
- Leak-proof
- Easy handling
- No special shipping container required
- Long service life
- Trouble-free, safe operation in any position.
- No need to add electrolyte, as gasses generated during overcharge are recombined in a unique "Oxygen Cycle"
- High-impact resistant case made of non-conductive ABS plastic with superior resistance to shock, vibration, chemicals and heat

SOLAR PANEL OPTIONS*

5100-0400-1 Solar Panel, 10 Watt Unregulated with 10 ft. Cable

5100-0410-1 Solar Panel, 20 Watt Unregulated

*Solar panels are sold separately.

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AT/RH SHIELD 5600-0021

MULTI-PLATE FREE-FLOWING RADIATION SHIELD

FEATURES

- Protects temperature and relative humidity sensors from error-producing solar radiation and precipitation.
- Compact size and light weight make this shield useful for many applications.
- Naturally ventilated, requires no power
- Used with ambient temperature sensors
- Useful for a wide range of applications
- Well suited for field studies where power for aspiration is not available
- Easy air passage through shield
- Unique shape of disc provides positive blockage of direct solar radiation, as well as reflected radiation from the temperature sensing element.
- Specially formulated thermoplastic disc material for maximum weatherability, high reflectivity, low thermal conductivity, and low heat retention
- Accommodates variety of sensors through threaded plastic hex plug (sensors up to 1 in. (26mm) dia.)

ORDERING

5600-0021-1	Radiation Shield, AT/RH, for sensors .5 in. dia. Used with 5600-0020, 5600-0025
5600-0021-2	Radiation Shield, AT/RH, for sensors 1 in. dia. Used with 5600-0311, 5600-0313-1
5600-0021-3	Radiation Shield, AT/RH for 5600-0312 0.75 India Used with 5600-0312

For an aspirated shield, contact Sales.

SPECIFICATIONS

Specifications subject to change without notice

Sensor Types	Accomodates temperature and humidity sensors up to 26 mm (1 in.) diameter
Radiation Error	@1080 W/m2 intensity - dependent on wind speed
	0.4°C (0.7°F) RMS @ 3 m/s (6.7 mph)
	0.7°C (1.3°F) RMS @ 2 m/s (4.5 mph)
	1.5°C (2.7°F) RMS @ 1 m/s (2.2 mph)
Construction	UV stabilized white thermoplastic plates, aluminum mounting bracket, white stainless steel u-bolt clamp
Dimensions	10.6 in. H x 4.7 in. Dia.
	27cm x 12cm
Mounting	U-bolt fit vertical pipe 1 in.-2 in. (25mm to 50mm) dia.
Weight	0.7kg (1.516 lb.)

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AT/RH SENSOR
5600-0316

STATE OF THE ART ASIC TECHNOLOGY WITH A ROBUST PLUG-IN

FEATURES

- 100% interchangeable to reduce maintenance costs and eliminate downtime
- Digital and analog interface
- ROTRONIC Humidity Sensor (0...100% rh)
- Accuracy ± 1.5% rh and ± 0.2 K NOTE: In order to achieve "Accuracy of ± 0.1°C", it is necessary to perform "individual sensor calibration with matched transfer function".
- Temperature sensor Pt100 1/5 DIN
- Long Term Stability <1% rh/year
- Sensor module can be replaced in seconds without any loss of accuracy and without calibration
- Measuring Range - 0...100% rh and -40...+85°C (-40 ...+185°F)

ORDERING

5600-0316-1
Temperature/Relative Humidity Sensor with 3 Meters of Cable(no connector included - tinned pig tail ends) Includes MOK3-05-XX.

5100-0021
Radiation shield, AT/RH for 5600-0316-1 (not shown)

SPECIFICATIONS

Power Supply	3.5...50VDC
Current Consumption	<4mA
MEASURING RANGE	
Humidity	0...100% rh
Temperature	-40...+85°C
	-40...+185°F
OPERATING RANGE	
Temperature	-40...+85°C
	-40...+185°F
ACCURACY AT 23°C	
Humidity	± 1.5% rh
Temperature	± 0.2 K
Special calibration available upon request	
OUTPUT SIGNAL	
Analog	0...1/00% rh = 0...1V -40...+85°C=0...+1.25V (HygroClip S3, white)
Digital	one wire
Sampling Time	<0.7s (minimum excitation time 3s)
RESOLUTION	
Humidity	100% rh/12 bit analog 16 bit digital, 1%
Temperature	250°C /12 bit analog 16 bit digital, ±0.1°C
CALIBRATION SENSOR	
PC (data in EE-Prom)16 bit digital	
Humidity	HYGROMER-C94
Temperature	Pt100 1/5 DIN
Analog Output Load	>10k Ohm
Maximum Cable Length	5m (1/5 ft.) with amplifier up to 100m (300 ft.)
Sensor Protection	Wire filter (20 m/s)
DIMENSIONS	
Total Length	100mm
Diameter	-15mm (0.59 in)
Connection Type	Bayonnet cap on mounting connector
Protection Grade	IP65
Material Color	Polycarbonate, white
EMC Compatibility (CE)	EN50081-2, EN50082-2

8/29/2007

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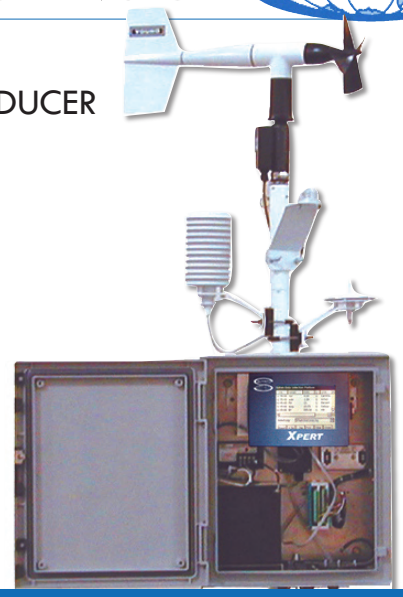
ACCUBAR®
BAROMETRIC PRESSURE SENSOR

HIGHLY ACCURATE, SOLID STATE PRESSURE TRANSDUCER



FEATURES

- Low power design makes it ideally suited for remote monitoring applications.
- Capable of operating from elevations of 1200 feet below sea level to 13,000 feet above sea level
- Wide temp range -45°C to +60°C
- Low power consumption
- Solid state construction
- Low cost
- Light weight aluminum construction
- RS-232, SDI-12, and Analog 0 - 5 VDC outputs

ORDERING

5600-0120-1

Pressure Sensor, Barometric, RS-232 and SDI-12 outputs

5600-0120-2

Pressure Sensor, Barometric, RS-232, SDI-12 and Analog 0-5VDC outputs

SPECIFICATIONS

Specifications subject to change without notice

RANGE	600 to 1100mB (hPa)
	17.7 to 32.5 in. Hg
ELEVATION	-1200 to 13,000 feet
ACCURACY	0.5mB (hPa) Consult factory for greater accuracy.
RESOLUTION	0.01mB
AV. TIME	0 to 240 seconds (user selectable)
TEMP RANGE	-45°C to +60°C
SUPPLY POWER	+8 to +28VDC (reverse polarity protected)
OUTPUT	Standard (-1) RS-232 and SDI-12
	Optional (-2) RS-232, SDI-12, and Analog 0-5VDC (accuracy 7mV)
RS-232 DATA	Continuous or on-demand
COMMUNICATION	1200 baud, even parity, 7 data bits, one stop bit
PRESSURE UNITS	mB, hPa, kPa, in. Hg, mm Hg, ATM, psi, user specified units

DIMENSIONS	3.14 in. x 2.95 in. x 2.24 in. excluding connectors and cable
WEIGHT	<1 lb
VIBRATION	0.5 g @ 10-50Hz
PRESSURE FITTING	Hose barb for 3/16 in. ID hose
ELECTRICAL CONNECTION	Cable gland for 1/4 in. cable to terminal block for 16 to 28 AWG wire

POWER CONSUMPTION

(-1) RS-232	active	17 mA typ
SDI-12	active	6 mA typ
	standby	2 mA typ
(-2) RS 232	active	18 mA typ
SDI-12	active	9 mA typ
	standby	8 mA typ

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TIPPING BUCKET RAIN GAUGE
STAINLESS STEEL 5600-0425

STANDARD PRECISION INSTRUMENT FOR THE MEASUREMENT OF RAINFALL ACCUMULATION &/OR RATE

- Rain enters gauge through an eight inch orifice, protected by distortion preventing aluminum ring
- Collected water passes through debris-filtering screen and is funneled into one of two tipping buckets inside the gauge.
- When a given amount of water collects, bucket tips (amount determined by calibration).
- Tipping causes magnet to pass over proximity switch, closing it momentarily.
- Second bucket positions under funnel for filling.
- After rain is measured, it exits through drain tubes with screen covered holes in the base of the gauge.
- Designed for many years of accurate, trouble-free operation
- Constructed entirely of stainless steel
- Stainless steel outer housing
- Built in level indicator and pre-drilled feet

APPLICATIONS

- Meteorological Station
- Stormwater Management

SPECIFICATIONS

Specifications subject to change without notice

MECHANICAL

Orifice Size	7.87 in. (20 cm) Diameter
Dimensions	8.25 in. (20.95 cm) Dia x 24 in. (609.6 cm) H
Weight	6.4 lbs (2.9Kg)
Switch Switch	Rugged Magnetic Proximity

OPERATIONAL

Output	0.1 second switch closure
Accuracy	±0.5% at 0.5 in./hr (1.27 cm/hr.)
	±2% at 2 in./hr (5.08 cm/hr)

SENSITIVITY/RESOLUTION

5600-0425-1	0.1mm
5600-0425-2	0.2mm
5600-0425-3	0.3mm
5600-0425-5	0.5mm
5600-0425-6	0.01 inches

ORDERING

5600-0425-1
Rain Gauge, Stainless Steel, Tipping Bucket 0.1mm/tip (includes 50ft/15m cable)

5600-0425-2
Rain Gauge, Stainless Steel, Tipping Bucket 0.2mm/tip (includes 50ft/15m cable)

5600-0425-3
Rain Gauge, Stainless Steel, Tipping Bucket 0.3mm/tip (includes 50ft/15m cable)

5600-0425-5
Rain Gauge, Stainless Steel, Tipping Bucket 0.5mm/tip (includes 50ft/15m cable)

5600-0425-6
Rain Gauge, Stainless Steel, Tipping Bucket 0.01 inch/tip (includes 50ft/15m cable)

Accessories

6661-1137-1
Drain Kit, Tipping Bucket

6211-1024-1
Mounting Kit, Tipping Bucket to tower

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ULTRASONIC WIND SENSOR 5600-0215

APPLICATIONS

- Ag-Met
- Automatic Weather Stations
- Pollution Control
- Hydro-Met
- Utilities
- HVAC

FEATURES

- Consistent performance, no accuracy degradation from wear of moving parts
- Corrosion free, uv resistant material
- Low start speed (0.01 m/s, 0.09 knots)
- Maintenance free
- No calibration required
- Robust construction
- Software configurable
- Status code output
- True 0° - 360° operation (no dead band on direction output)
- Wind speed and direction from a single unit
- Economic to use
- Land-based or marine applications

FEATURES WITH SDI-12 OPTION

- Multiple WindSonics may be connected via one cable to a single SDI-12 data logger port.
- Greater distances with SDI-12 than those possible with analogue voltage outputs
- SDI-12 WindSonic interfaces with any SDI-12 compatible data logger.
- Reduced risk of data corruption - an SDI-12 digital signal is less likely to be corrupted by external interference than analogue signals.
- Avoid proprietary protocol or custom wiring and programming of data loggers.
- Power supply to the WindSonic may be supplied through a single data cable.
- Widely used in water resource research by government, industry and agricultural organizations

SPECIFICATIONS

Wind Speed		
	Range	0 - 60 m/s (116 knots)
	Accuracy	±2%
	Resolution	0.01 m/s (0.02 knots)
Wind Direction		
	Range	0° - 360°, no dead band
	Accuracy	±3°
Resolution		1°
Outputs		
	Output	1, 2 or 4 outputs/second
	Parameters	Wind speed & direction or UV
	Units	m/s, knots, mph, kph, ft/min
	Option 1	RS232
	Option 2	RS232 + RS422 + RS485
	Option 3	RS232 + RS422 + RS485 0-5V or 4-20mA
	Option 4	SDI-12
Anemometer Status		Message is part of standard output .
Power Requirement		
	Anemometer	9-30Vdc @ 14.5mA typical; start-up time <1 second
MTBF		15 years
Materials		Luran S KR 2861/1C ASA/PC
Weight		.45 kg (1 pound)
Mounting		Pipe Mounting 44.45 mm (1.75 inches diameter)
Environmental		
	Moisture Protection	IP65
	Operating Temperature	-35° to +70° C
	Storage Temperature	-40° to +90° C
	Operating Humidity	<5% to 100%
	EMC	EN 61000-6-2: 2001 EN 61000-6-3: 2001

ORDERING

Part Number	Description
5600-0215-1	Basic Ultrasonic Wind Sensor, Option 1, RS232
5600-0215-2	Option 2: RS232 + RS422 + RS485
5600-0215-3	Option 3: RS232 + RS422 + RS485 + 0-5V
5600-0215-4	Option 3: RS232 + RS422 + RS485 + 4-20mA
5600-0215-5	Option 4: SDI-12
Accessory	
6411-1151-1	Cable Assy, WS/WD, 30 ft for 8200A/8210

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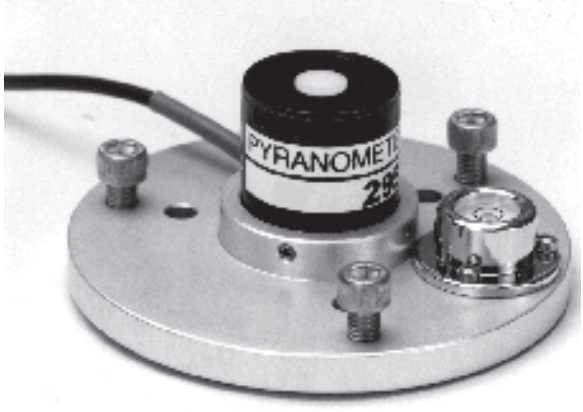
SILICON PYRANOMETER
5600-0600

DESIGNED FOR FIELD MEASUREMENTS IN SOLAR, AGRICULTURAL, METEOROLOGICAL, & HYDROLOGICAL STUDIES



SPECIFICATIONS

Specifications subject to change without notice

Range	400 to 1100 nm
Accuracy	Calibrated against an Eppley Precision Spectral Pyranometer (PSP) under natural daylight conditions. Absolute error under these conditions is ±5% maximum, typically ±3%.
Sensitivity	Typically 10 µV per 1000 W/m^2
Linearity	Maximum deviation of 1% up to 3000 W/m^2
Stability	< ± 2% change over one-year period
Response Time	10 µs
Temperature Dependence	± 0.15% per °C maximum
Cosine Correction	Cosine corrected up to 80° angle of incidence
Azimuth	< ±1% error over 360° at 45° elevation
Tilt	No error induced from orientation
Operating Temperature	-40°C to +65°C (-40°F to +149°F)
Relative Humidity	0% to 100% RH
Detector	High stability silicon photovoltaic detector (blue enhanced)
Sensor Housing	Weatherproof anodized aluminum case with acrylic diffuser and stainless steel hardware
Size	7.6 cm Dia x 3.6 cm H (3 in. x 1.4 in.)
Weight	123 g (4.4 oz)
Cable Length	3m (10ft) standard

APPLICATIONS

- Crop management
- Reflected solar radiation
- Global radiation
- Sky radiation
- Irrigation control

FEATURES

- Used extensively in solar energy studies for site evaluations and monitoring, passive system analysis, irrigation scheduling and other environmental studies.
- Patterned after the work of Kerr, Thurtell and Tanner,
- Features a silicon photovoltaic detector mounted in a fully cosine-corrected miniature head
- Can be mounted in any plane without affecting performance
- In clear unobstructed daylight conditions compares favorably with first class thermopile type pyranometers, but is priced at a fraction of the cost
- Spectral response does not cover full range of solar spectrum (error induced - <±5% - under most conditions of natural daylight)
- Includes a millivolt adapter to provide voltage output
- Includes anodized aluminum base with stainless steel leveling screws and a weatherproof spirit level

ORDERING

Part Number	Description
5600-0600-1	Pyranometer, Silicon, with leveling bracket
	Accessories
6661-1098-1	Mounting Kit, Pyranometer
8111-1073-1	Amplifier with voltage and frequency outputs

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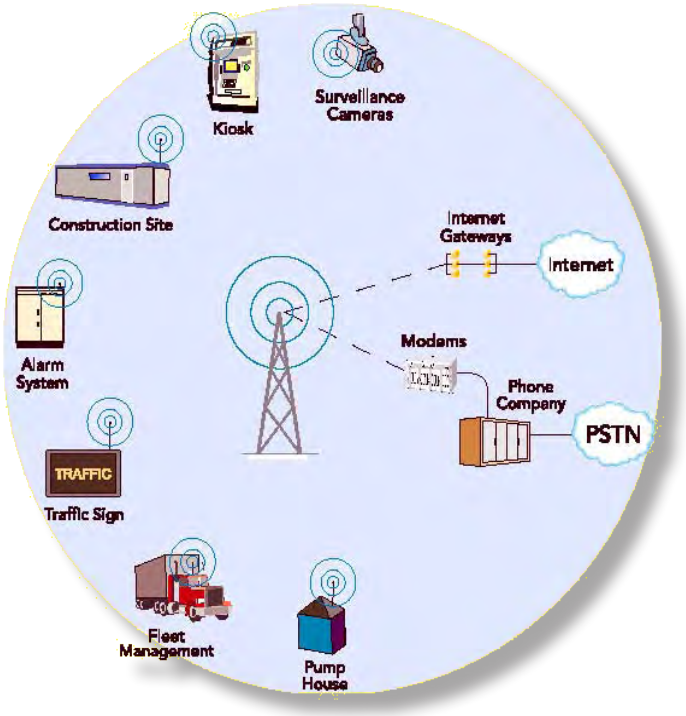
GPRS MULTI-MODEM

The GPRS wireless modem offers standards-based quad-band GSM/GPRS Class 10 performance. This ready-to-deploy, standalone modem provides wireless data communication and integrates seamlessly with virtually any application. It is available with a broad range of interface options including RS-232, USB and Ethernet to cover all of your application needs. The MultiModem GPRS wireless modem is based on industry-standard open interfaces and can be desktop or panel mounted.

BENEFITS

- Rugged industrial chassis design
- Desktop or panel mounting
- Carrier approved
- RS-232, USB & Ethernet interfaces



FEATURES

- GPRS Class 10
- Quad-band 850/900/1800/1900 MHz
- Packet data up to 85.6K bps
- Embedded TCP/IP stack
- Circuit-switched data up to 14.4K bps transparent and non-transparent
- GSM Class 1 and Class 2 Group 3 Fax
- Short Message Services (SMS)
- RS-232, USB and Ethernet interfaces
- SMA antenna connector and SIM socket
- Serial interface supports DTE speeds to 115.2K bps
- AT command compatible
- MNP2 error correction, V.42bis compression
- Numerous LEDs provide operational status
- Desktop or panel mounting
- PTCRB certified
- Carrier approved
- Two-year warranty
- Network & RF Approved: The modem is PTCRB certified & has successfully completed worldwide compliance testing for global RF approval.

HIGHLIGHTS

APPLICATIONS. With packet data speeds up to 85.6K bps, this GPRS wireless modem is targeted at applications which periodically need to send or receive data over a wireless network. It is ideal for:

- Automated machine-to-machine (M2M)
- Public Safety/Emergency Services
- Public Transit
- Remote Industrial, Medical, Environmental, Monitoring
- Remote diagnostics
- Security Systems
- Telemetry/Remote Metering
- Vehicle Tracking/Fleet Management/AVL

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GPRS MULTI-MODEM

REDUCES DEVELOPMENT TIME.

The GPRS wireless modem makes your existing & next generation device communication-ready without requiring hardware changes. It actually provides faster time to-market because it relieves the burden & expense of obtaining PTCRB & RF approvals. This complete, ready-to-deploy wireless modem allows you to enhance your product while you focus on developing its core features.

PACKET-SWITCHED DATA.

The MultiModem GPRS wireless modem supports GPRS Class 10 packet-switched cellular data to enable mobile Internet functionality by allowing interworking between the existing Internet & the cellular network at speeds up to 85.6K bps. Any service used over the fixed Internet today – File Transfer Protocol (FTP), web browsing, etc. - is available over the cellular network too, including PBCCH, coding schemes.

CIRCUIT-SWITCHED DATA.

It supports GSM circuit-switched cellular data connections. Circuit-switched data connections support speeds up to 14.4K bps, Class 1 & Class 2 Group 3 fax, as well as MNP 2 error correction, V.42bis compression. CSD cellular wireless connections are ideal for applications that require a quick wireless replacement of an existing point-to-point analog dial-up connection. They integrate seamlessly with your current application requiring little infrastructure change.

SHORT MESSAGE SERVICES.

The modem offers SMS such as text & PDU, point-to-point (MT/MO) & cell broadcast. Internet-enabled. It includes an embedded TCP/IP protocol stack to bring Internet connectivity to any device without making changes to its hardware design. Using the Internet protocols & the wireless connection to an IP network, the modem sends & receives data over the Internet.

INDUSTRIAL CHASSIS.

The modem is packaged in a rugged, industrial chassis with an SMA antenna connector. It can be desktop or panel mounted & features numerous LEDs providing operational status.

MANAGEMENT FEATURES.

The modem provides advanced management features including phone book & alarms.

VOICE FEATURES.

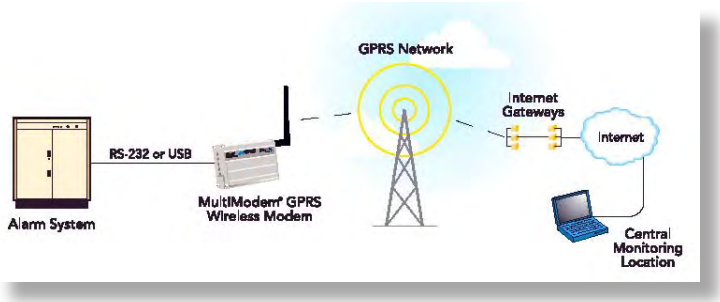
The modem provides telephony & Dual Tone Multi Frequency (DTMF) transmission functionality & also allows for emergency calls, echo cancellation & noise reduction (option), & full rate, enhanced Full Rate & Half Rate (FR/EFR/HR).

COMPATIBLE SUPPLEMENTARY SERVICES.

The GPRS modem is compatible with supplementary services such as call forwarding, call barring, multiparty, call waiting & call hold, calling line identification, etc.

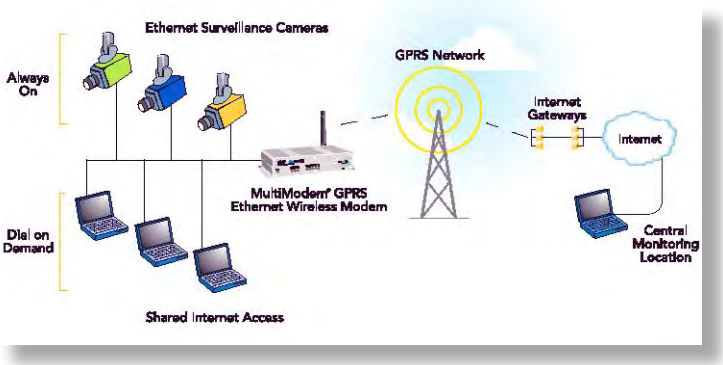
MULTIPLE INTERFACE OPTIONS.

Designed around a broad range of inter face options including RS-232, USB & Ethernet to provide you with seamless connectivity for your application, each modem interface option offers unique features & benefits related to the technology it supports.



SERIAL CONNECTIVITY.

The modem with a serial interface utilizes RS-232 or USB to connect to any serial device to provide access to the Internet. The RS-232 model supports DTE speeds of 115.2K bps and provides a DE-15 voice/data interface and permanent screw-type power connector. The USB model provides for the easiest modem installation. The USB interface features a 12M bps serial connection and utilizes an RJ-9 jack for voice connectivity. In addition, it is host-based USB powered which means no external power supply is required.



ETHERNET CONNECTIVITY.

It also provides shared Internet access with one IP address. The built-in routing capabilities provide DHCP services & firewall security utilizing Network Address Translation. The modem can be configured for one of three network connections: always-on, wake-up on ring, or dial-on demand. The always-on network connection automatically establishes a wireless data connection & allows for around the clock surveillance, monitoring or realtime data acquisition of any remote Ethernet device such as

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GPRS MULTI-MODEM

a Web camera. If the data link is dropped in the event of poor reception or a complete loss of service, it will automatically re-establish the data link. The wake-up on ring configuration allows the modem to "wake up" & initiate a connection when it detects an incoming ring. For security reasons, you can setup the modem to wake up based on the caller ID. This configuration is ideal for reducing the costs associated with the modem being online & available 24/7. When configured for dial-on demand, the wireless modem only accesses the Internet when data is present. This configuration is ideal for sharing Internet access among networked PCs.

INDUSTRY-STANDARD MODEM COMMANDS.

This modem provides industry-standard AT-style commands for easy integration into existing software.

ORDERING
Product Description Region
MTCBA-G*† GSM/GPRS Class 10 Modem Global
Ordering Codes
-F4 850/900/1800/1900 MHz GPRS Modem
-U USB Interface
-ED 900/1800 MHz Default
-EN Ethernet Interface
-NAM Includes US Style Power Cord
-EU Includes Euro Style Power Cord
-GB/IE Includes UK Style Power Cord

* Use ordering codes for specific build options. Check with your local carrier to see which frequency bands are required. Go to www.multitech.com for detailed product model numbers.

† All build options support 850/900/1800/1900 MHz cellular connectivity.
Standard builds default to 850/1900 MHz while the builds that include a -ED in the ordering code default for 900/1800 MHz.

SPECIFICATIONS

PACKET DATA FEATURES
- GPRS Class 10, PBCCH support
- Coding Schemes: CS1 to CS4
- Embedded TCP/IP stack

CIRCUIT SWITCHED DATA/FAX FEATURES
- Asynchronous, transparent & non-transparent up to 14.4K bps, MNP2 & V.42bis
- Group 3 fax, Class 1 & Class 2

SMS FEATURES
- Text & PDU, Point-to-Point, cell broadcast

INTERNET PROTOCOLS SUPPORTED
- DNS Resolve, FTP client, IP, IPCP, LCP, PPP (dial-out), TCP socket, UDP socket, CHAP, PAP

ANTENNA CONNECTOR
- RF Antenna: 50 ohm SMA (Female connector)

SIM CONNECTOR
- Standard 3V SIM receptacle

INTERFACE CONNECTORS
- RS-232 Model: DE-15
- USB Model: USB Type B
- Ethernet Model: RJ-45, 10BaseT/100BaseTX, 802.3

POWER CONNECTORS
- RS-232 & Ethernet Models: 2.5mm miniature screw
- USB Model: Bus Powered

VOICE CONNECTORS
- RS-232 Model: Optional Y-cable
- USB & Ethernet Models: RJ-9 4-pos modjack

POWER REQUIREMENTS
- 5V to 32VDC

PHYSICAL DESCRIPTION
- RS-232 & USB Models:
  4.3" L x 2.4" W x 0.94" H; 4.2 oz.
  (11 cm x 6.1 cm x 2.4 cm; 119g)
- ETHERNET MODEL:
  2.8" L x 6.4" W x 1.2" H; 11.5 oz.
  (7.1 cm x 16.3 cm x 3.0 cm; 326g)

OPERATING ENVIRONMENT	-30° to +70° C
CERTIFICATIONS:	CE Mark, R&TTE EMC: FCC Part 2, 15, 22, 24, EN 55022, & EN 55024
SAFETY:	cUL, UL 60950, EN 60950
NETWORK:	PTCRB

XSTREAM™-PKG RF MODEMS

SUTRON

DESCRIPTION

- Available in 900 MHz and 2.4 GHz models, these modems provide transmission ranges of up to 20 miles in a low-cost wireless solution.
- Configured in minutes to provide low-cost serial cable replacement between all types of eelctronic devices
- Coupled with a DIP-switchable RS-232/422/485 interface board & regularly outperform more expensive RF modems.
- Yield 2 to 8-times the range of competing modems. allowing more ground to be covered with fewer devices.
- Easy to use to reduce the complexity of data system development.
- Available in a variety of data interface options, including RS-232/422/485 serial, USB and telephone, XStream-PKG modems can wirelessly connect a variety of devices across many applications including remote monitoring, building automation/security, industrial automation/SCADA, fleet management/asset tracking and sensor data capture in embedded systems.

FEATURES

- Indoor/urban range up to 1500 feet
- Outdoor line-of-sight range up to 20 miles (with high gain antenna)
- 7 frequency hopping channels, each with 65K available addresses
- Outstanding receiver sensitivity (-110 dB @9600 bps)
- Low power consumption for power-sensitive applications - Pin, serial port and cyclic sleep modes available
- Performs retries and acknowledgments for reliable packet delivery
- Easy out-of-the-box operation— no configuration necessary
- Durable industrial grade enclosure
- Indoor/Urban range (w/ 2.1 dB dipole antenna):

  - Up to 1500 feet (450 m) @ 900 MHz

  - Up to 600 feet (180 m) @ 2.4 GHz

100 MW/900 MHZ OR 50 MW/2.4 GHZ STAND-ALONE RADIO MODEMS PROVIDE OUTSTANDING RANGE (UP TO 20 MILES) IN A LOW-COST WIRELESS SOLUTION.

- Outdoor RF line-of-sight range (w/ 2.1 dB dipole antenna):

  - Up to 7 mi (11 km) @ 900 MHz

  - Up to 3 mi (5 km) @ 2.4 GHz
- Outdoor RF line-of-sight range (w/ high gain antenna):

  - Up to 20 mi (32 km) @ 900 MHz

  - Up to 10 mi (16 km) @ 2.4 GHz
- Transmit power output:

  - 100 mW (20 dBm) @ 900 MHz

  - 50 mW (17 dBm) @ 2.4 GHz
- Receiver sensitivity:

  - 900MHz: -110 dBm (@9,600 bps throughput data rate), -107 dBm (@19,200 bps)

  - 2.4 GHz: -105 dBm (@9,600 bps throughput data rate), -102 dBm (@19,200 bps)
- Interface data rate (software selectable): 10 - 57600 bps (including non-standard baud rates)
- Throughput data rate: 9,600 or 19,200 bps
- RF data rate: 10,000 bps (@9,600 bps throughput data rate) or 20,000 bps (@19,200 bps)

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XSTREAM™-PKG RF MODEMS

CERTIFICATION	
FCC ID (U.S. Certification Part 15.247)	OUR9XSTREAM (900 MHz)
	OUR-24XSTREAM (2.4 GHz)
IC ID (Canada)	4214A-9XSTREAM (900 MHz),
	4214A 12008 (2.4 GHz)
Europe	ETSI, CE (2.4 GHz only)
DIMENSIONS	
XStream-PKG-R, XStream-PKG-U	
Length	2.75 in. (6.99 cm)
Width	5.50 in. (13.97 cm)
Depth	1.12 in. (2.86 cm)
Weight	7.10 oz (200.00 g)
XStream-PKG-T	
Length	2.75 in. (6.99 cm)
Width	6.50 in. (16.51 cm)
Depth	1.50 in. (3.80)
Weight	8.10 oz (228.00 g)
ENVIRONMENTAL (ALL MODELS)	
Operating Temperature	0° C to 70° C (commercial)
Operating Temperature	-40° C to 85° C (industrial)
POWER REQUIREMENTS	
XStream-PKG-R	
Power supply voltage:	7 - 18 V
Receive Current	70 mA @ 900 MHz
	90 mA @ 2.4 GHz
Transmit Current	170 mA @ 900 MHz
	180 mA @ 2.4 GHz
Power Down Current	< 1 mA
XStream-PKG-U	
Power Supply Voltage	5 - 12V
Receive Current	90 mA @ 900 MHz
	115 mA @ 2.4 GHz
Transmit Current	185 mA @ 900 MHz
	200 mA @ 2.4 GHz
Power Down Current	50 mA
XStream-PKG-T	
Power Supply Voltage	7 - 28V
Receive Current	140 mA @ 900 MHz
	160 mA @ 2.4 GHz
Transmit Current	220 mA @ 900 MHz
	230 mA @ 2.4 GHz
Power Down Current	n/a
NETWORKING & SECURITY	
Frequency	ISM 902 - 928 MHz or 2.4000 - 2.4835 GHz
Spread Spectrum	FHSS (Frequency Hopping Spread Spectrum)
Modulation	FSK (Frequency Shift Keying)
Supported Network Topologies	Peer to peer (no master/slave dependencies)
	Point to point
	Point to multipoint & multidrop
Channel Capacity (soft-ware selectable)	7 hopping sequences
Network Filtration Layers	VID, Hopping Channel & Destination Adderss
ANTENNA	
Connector Options	RPSMA (Reverse Polarity SMA)
Impedance	50 ohms unbalanced
CONNECTION OPTIONS	
RS-232	
USB (XStream PKG-U)	
Telephone RJ-11 (XStream PKG-T)	

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